

Ocean Ecology & Biogeochemistry

Required Course Offerings

The Solid Earth

Movement of mass and energy within the Earth and into/out of its outer surface; plate tectonics, source-to-sink sedimentary dynamics and climate history in various archives.

The Fluid Earth

Fundamental principles of fluid circulation in the atmosphere and ocean. Atmospheric chemistry, radiation, thermodynamics, and dynamics.

The Biogeochemical Earth

Integrating fundamental concepts in biological and chemical oceanography to understand energy and material transformations in estuarine, coastal and open ocean habitats.

Ocean Biogeochemical Dynamics

Examines what keeps ocean systems in balance and determines their response to perturbation.

Ocean Ecological Dynamics

Major characteristics of ocean biota and ocean ecosystems.

Questions?

If you have questions about the graduate program please contact student_advisor@coas.oregonstate.edu (for application details).

College of Earth, Ocean,
and Atmospheric Sciences
Oregon State University
104 CEOAS Admin. Bldg.
Corvallis, OR 97331-5503
541.737.5188
ceas.oregonstate.edu

The College of Earth, Ocean, and Atmospheric Sciences offers both Master's and Ph.D. degrees in Ocean, Earth, and Atmospheric Sciences with a concentration on Ocean Ecology and Biogeochemistry.

The course curriculum is closely integrated with the wide range of Earth science research conducted by OSU faculty. All incoming students are required to participate in the Cascadia Field Trip or Math Camp. During the first year, students complete a trio of breadth courses: Solid Earth, Fluid Earth, and Biogeochemical Earth, followed by two complementary upper-level courses: Ocean Ecological Dynamics and Ocean Biogeochemical Dynamics. All students may also take courses in other oceanographic disciplines, as well as courses offered in other departments at OSU. During subsequent years, students can choose from courses on a wide range of topics including, benthic biogeochemistry, the marine carbon cycle, physical/biological interactions and coastal and estuarine oceanography. Technique-oriented courses are also offered on topics including experimental methods in physical oceanography, satellite remote sensing, data analysis, numerical modeling, and data assimilation.

Research backgrounds of our faculty include population and community ecology, biogeochemical cycling, atmospheric sciences, land-ocean connectivity, food webs, optics, acoustics, remote sensing, deep-biosphere, and climate science. This diversity provides opportunities to break down traditional disciplinary boundaries and explore new lines of research.

Most students accepted for study receive Graduate Research or Teaching Assistantships covering tuition, stipend, and insurance. Our recent graduates have gone onto prestigious postdoctoral positions and various jobs in the private sector.



Oregon State University
College of Earth, Ocean,
and Atmospheric Sciences

Ocean Ecology & Biogeochemistry Faculty

Ed Brook, Professor

Paleoclimatology, geochemistry.

Lorenzo Ciannelli, Professor

Fisheries oceanography, spatial ecology, fish early life stages.

Rick Colwell, Professor

Subsurface microbiology, geomicrobiology, coupling of microbial rates and processes to physical and chemical parameters in the environment.

Louise Copeman, Assistant Professor

Fatty acids and lipid classes in marine food webs, climate change in temperate and polar systems, essential fatty acid nutrition.

Byron Crump, Professor

Marine microbial ecology, bacterial and Archaeal biogeography, organic matter and nutrient cycling, microbial food web structure.

Jennifer Fehrenbacher, Assistant Professor

Trace element and stable isotope geochemistry, biomineralization.

Miguel Goni, Professor

Cycling of organic matter in the earth's surface, mainly in aquatic environments.

Burke Hales, Professor

Biogeochemical oceanography.

Brian Haley, Associate Professor

All aspects of marine biogeochemistry, with a focus on elemental and isotopic research of metals in nature.

Laurie Juranek, Assistant Professor

Dissolved gases, isotope biogeochemistry, marine biological pump, marine carbon cycle.

Ricardo Letelier, Professor

Response of marine pelagic microorganisms, populations, and communities to environmental perturbations.

Jennifer McKay, Assistant Professor

Use of stable isotopes and trace metals in paleoceanographic studies, the marine biogeochemistry of silver and the use of silver as a paleoproductivity proxy.

Alan Mix, Professor

Paleoceanography and paleoclimatology, micropaleontology, geochemistry, Director, CEOAS/OSU Stable Isotope Laboratory.

Clare Reimers, Professor

Benthic biogeochemistry, chemical sensor development, in-situ measurements of redox conditions, carbonate chemistry.

Andreas Schmittner, Associate Professor

Climate modeling.

Alyssa Shiel, Assistant Professor

Heavy stable isotope geochemistry, geochemical tracer development, transport, transformations, and environmental fate of metals/metalloids.

Yvette Spitz, Professor

Investigation of the main pathways in marine ecosystems, development of coupled physical-biological models.

Andrew Thurber, Assistant Professor

Microbe-metazoan interactions, deep-sea and polar ecology, food web dynamics, deep-sea reducing habitats, Annelid ecology.

Marta Torres, Professor

Cold seepage at convergent and transform margins, gas hydrate dynamics, transport mechanisms and fluid provenance, role of microbial communities in early diagenetic processes.

George Waldbusser, Associate Professor

Role of organisms in modifying physical and biogeochemical processes in sediments, species interactions in sediments, coastal and estuarine acidification effects on bivalves.

Rob Wheatcroft, Professor

Clastic sedimentology and stratigraphy, sediment transport, seafloor properties, early diagenesis, bioturbation.

Angelicque White, Associate Professor

Phytoplankton physiology, nitrogen fixation, phosphorus cycling, elemental stoichiometry, harmful algal blooms, numerical approaches to modeling phytoplankton-mediated processes.

Ocean Ecology and Biogeochemistry Facilities

New Class of Research Vessel

Regional Class Research Vessel project, the largest grant in the university's history. CEOAS is overseeing the design and construction of the newest research vessels in the U.S. fleet, which will provide valuable scientific capacity for studying our oceans.

Elemental Analyzer Facility

WHAT: Analyze particulate samples (including particles contained on glass fiber filters) for organic and inorganic carbon, nitrogen and, with some modifications, oxygen, hydrogen, and sulfur content.

HOW: NC2500 ThermoQuest Elemental Analyzer fitted with a Costech Zero Blank Autosampler ECS 4010 CHNSO Analyzer fitted with at Costech Zero Blank Autosampler.

HPLC Facilities

WHAT: Analyze samples for a variety of commonly found pigments of phytoplankton origin.

HOW: Waters 996 absorbance photodiode array detector in combination with a Waters 2475 fluorescence detector.

W.M. Keck Laboratory for Plasma Spectrometry

The W. M. Keck Collaboratory for Plasma Spectrometry, founded in 1992, operates four types of plasma spectrometers: quadrupole ICP-MS, high-resolution ICP-MS, multi-collector ICP-MS, and optical emission ICP. These state of the art instruments accommodate a wide range of elemental characterization, including isotopic analysis. Equipment at the Collaboratory is available to outside users. wmkeck-icpms.coas.oregonstate.edu

The CEOAS Environmental Computing Center contains modern, high-throughput computing-class infrastructure in order to facilitate, deliver and meet the challenges of next-generation scientific workflows.

